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Onyx Systems
Incorporated

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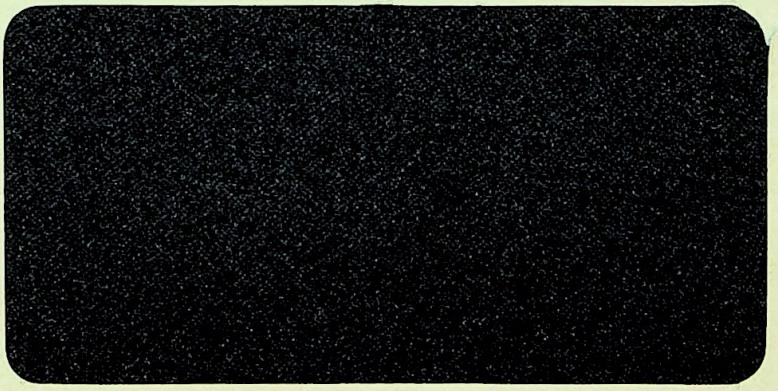

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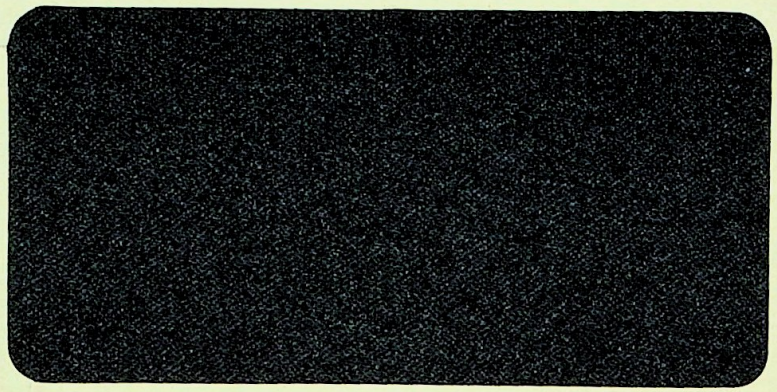

C8000
User Guide

SECOND EDITION - August 1979

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CONTENTS OF THIS GUIDE

The C8000 is a compact and easy-to-use computer manufactured by ONYX Systems, Inc. This Guide tells you what you need to know about the equipment itself. The Guide assumes a minimum of knowledge of computer systems on the part of the reader. Separate manuals describe the software designed to run on the C8000. Those manuals published by ONYX Systems are listed in Appendix C.

HOW TO USE IT

This Guide is set up so that you can skip chapters that do not pertain to your use of the C8000. For example, the person installing the C8000 needs to read only Chapters 1 and 2. The person using the C8000 initially needs to read Chapters 1, 3, and parts of 5. He'll have to refer to Chapters 4 and 5 only when certain situations arise during the use of the C8000.

UPDATES

ONYX Systems will revise this Guide as needed to keep it current with changes to the C8000. To make sure that you receive new editions as they're published, fill out the "Request for Updates" form in Appendix E. Tear the form out and mail it to ONYX Systems. ONYX will then place your name on the distribution list for the C8000 User Guide and for any special bulletins pertaining to the C8000.

oOo

Chapter 1

The C8000

GENERAL DESCRIPTION

The C8000 is a rugged, easy-to-use computer system. It has a minimum of components that you need to be familiar with. On the front panel, you will use or refer to the:

keyswitch,
power-on indicator, and
tape cartridge opening.

On the back panel, you'll use or refer to the:

reset switch,
terminal connector,
modem connector,
serial printer connector,
parallel port connector,
fuse holder, and
power cord and connector.

In addition to the computer itself, ONYX Systems supplies a Software Distribution Tape with every C8000.

Figure 1-1 shows each of these components. The discussion that follows describes each one in turn.

KEYSWITCH

This is a two position, locking switch that is operated by a key. The left position is the power OFF position, the right is power ON. You can remove the key when the switch is turned to the ON or OFF position. The C8000 is then locked in that

mode. We recommend that you remove the key and store it in a safe place except when turning the C8000 on or off. This will prevent anyone from accidentally turning the C8000 off. Removing the key will also allow you to control access to your machine.

POWER-ON INDICATOR

This lamp, which is located to the right of the keyswitch, will be lit whenever the system is on. The lamp will need replacing after roughly 15,000 hours of use. Chapter 5, "Maintaining the C8000", describes how to replace the lamp.

CARTRIDGE OPENING

The C8000 uses magnetic tapes for removable storage. The opening for tapes is located below the keyswitch and the power-on indicator. Insert tapes into the opening by sliding the tape cartridge in with the metal side down. You'll encounter some resistance when the tape is inserted partway. Continue to push the cartridge in firmly until you hear a buzzing sound, which indicates that the tape drive is automatically rewinding the tape. The tape is now ready to be read from or written on by the C8000. Only "3M" tapes designed for use at 6400 BPI can be used on the C8000.

Chapter 3, "Using the C8000", goes into more detail on which tape cartridges to use on the C8000 and how to operate the tape drive.

RESET SWITCH

This is a red pushbutton on the rear panel. Pressing it momentarily resets the C8000 to its initial state.

WARNING Do not reset the C8000 while a program is running. Doing so may destroy data on the system disk.

TERMINAL CONNECTOR

This is a 25-pin, "D" connector on the rear panel that is wired to accept the plug from a terminal. Chapter 2, "Installing the C8000", describes its specific pin assignments.

MODEM CONNECTOR

This is a 25-pin, "D" connector on the rear panel that is wired to accept the cable from a modem. Chapter 2, "Installing the C8000", describes its specific pin assignments.

SERIAL PRINTER CONNECTOR

This is a 25-pin, "D" connector on the rear panel that is wired to accept the plug from a serial printer. Chapter 2, "Installing the C8000", describes its specific pin assignments.

PARALLEL PORT CONNECTOR

This is a 37-pin, "D" connector on the rear panel that provides a general purpose, bidirectional parallel interface to the C8000. You will typically use this connector to attach a line printer to the C8000. To do so, you'll need a special cable that is wired for printers with a "Centronics" interface. The cables are available from ONYX Systems by special order.

Chapter 2, "Installing the C8000", describes the specific pin assignments for the parallel port connector.

FUSE HOLDER

Located near the power cord connector, this receptacle contains the main fuse for the C8000. Chapter 5, "Maintaining the C8000", tells how to change the fuse.

POWER CORD AND CONNECTOR

This three-prong, detachable cord is plugged into the connector near the fuse holder.

SOFTWARE DISTRIBUTION TAPE

This tape, which is supplied with every C8000, contains several utility programs and a list of the software provided by ONYX Systems with your machine. You'll need to use this tape only in the following cases:

- o when you suspect that the C8000 is malfunctioning;
- o when you have destroyed data on the system disk; and
- o when you want to verify the version number and release date of the software supplied by ONYX.

Chapter 4, "Diagnosing and Handling Problems", describes how to use the Software Distribution Tape.

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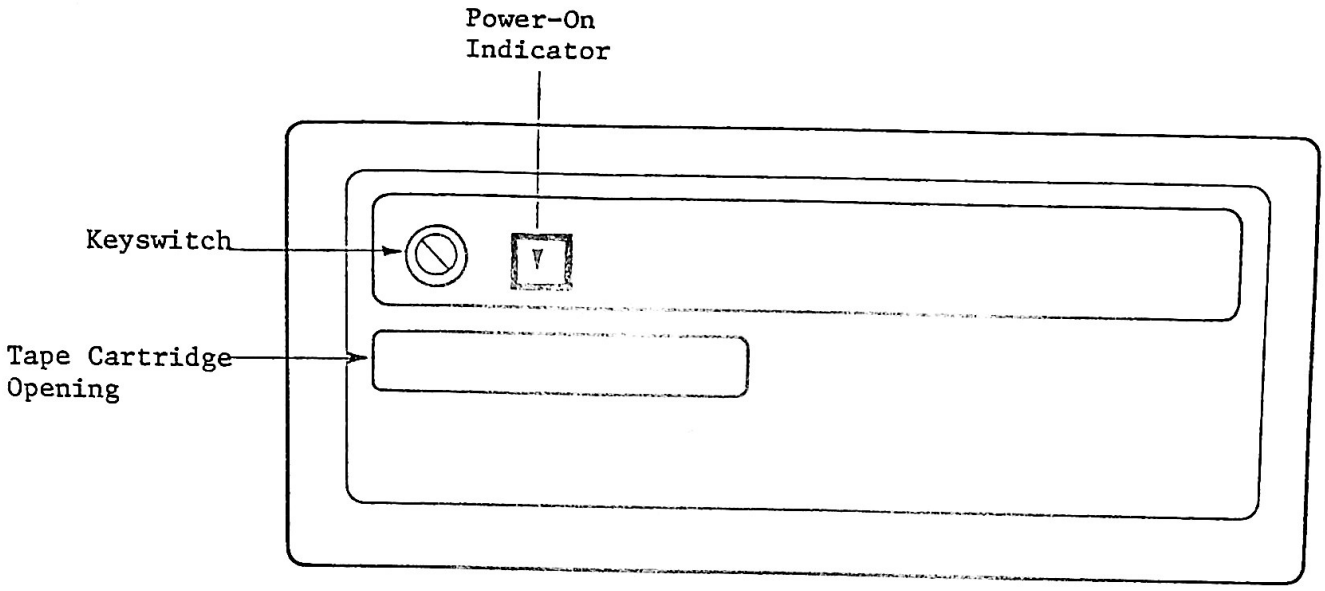
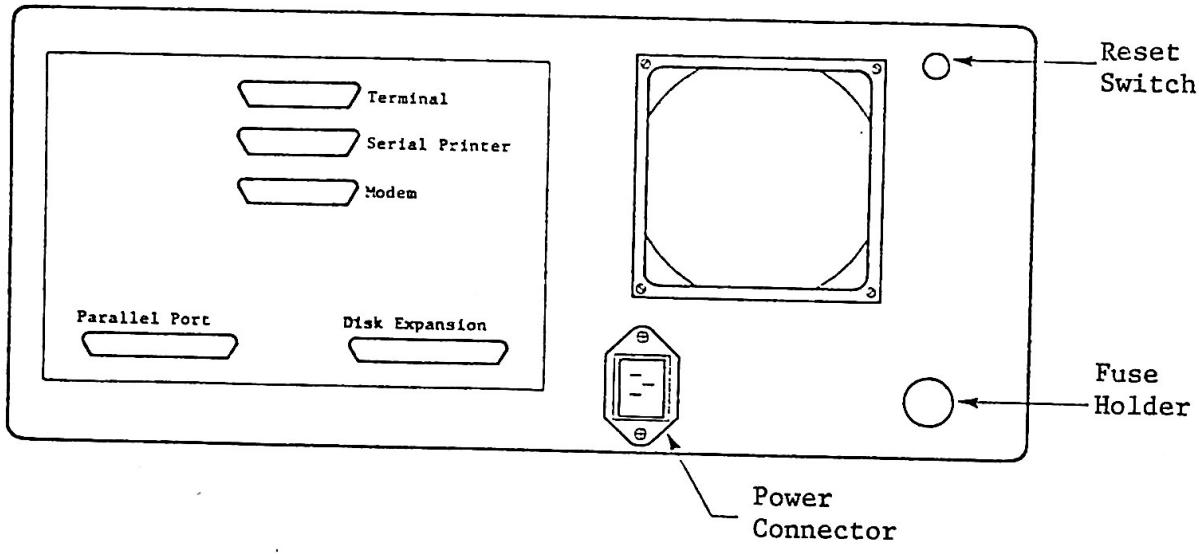


C8000 Front Panel



C8000 Rear Panel

Figure 1-1 Component Locations

Chapter 2

Installing the C8000

INTRODUCTION

This chapter describes how to unpack and set up the C8000. It also describes the terms of your warranty.

If you are not already familiar with the components of the C8000, read Chapter 1, "The C8000", before continuing.

PHYSICAL REQUIREMENTS

The C8000 is designed to operate in a normal office environment. Specific requirements are given below.

Size and Weight. The C8000 measures 8 inches (20.3 cm.) high, 17 inches (43.2 cm.) wide, and 22 inches (55.9 cm.) deep. It weighs 55 pounds (24.8 Kg.).

Power. The C8000 requires either a 115 VAC, 60HZ, 5.0 amp line, or a 230 VAC, 50 HZ, 2.5 amp line. The line must be grounded and unaffected by power surges.

Temperature/Humidity. Temperature and humidity need not be specially controlled, although extremes should be avoided. Conditions suitable for normal office work are generally acceptable. The specific limits within which the C8000 is guaranteed to operate are:

Temperature: 10°C - 40°C (50° - 104° F)

Humidity: 20% - 80% (without condensation)

CONTENTS OF CARTON

The C8000 was shipped in a carton containing the items listed below. As you are following the unpacking instructions, make sure that you've received everything. If you haven't, call your ONYX Systems Dealer.

- C8000 computer chassis (1)
- Power cord (1)
- System keys (2)
- Spare fuse (1)
- Software Distribution Tape (1)
- Blank tape cartridge (1)
- C8000 User Guide (1)
- Software manuals (1 set)

UNPACKING AND INSTALLING THE C8000

It is extremely important that you follow these instructions exactly. Failure to do so will invalidate your warranty and may cause irrepairable damage to the system disk drive.

Save all packing material for later use, such as moving the C8000 or returning it for service.

1. Remove the chassis from its protective plastic cover.

2. Remove the 10 flat head screws holding the cover in place, and remove the cover.

3. Locate the disk carriage locking screw. This screw is located approximately in the center of the right (viewed from front) side of the disk unit. Unlock the carriage by turning the screw clockwise for approximately 19 turns or until resistance is encountered. Do not overturn as it is possible to damage the lock by applying too much force.

4. Match the transmission (baud) rate of the C8000 to that of your terminal by setting the switches at

the rear of the printed circuit board (see figure 2-1). These switches are best set with the point of a pencil or pen. Use the appropriate combination from the table below.

Baud Rate	SWITCH 1	2	3	4
300	Off	Off	Off	Off
1200	Off	Off	Off	On
2400	Off	Off	On	Off
4800	Off	Off	On	On
9600	Off	On	Off	Off
19200	Off	On	Off	On

The C8000 expects the terminal to be configured with no parity, one start bit, and two stop bits.

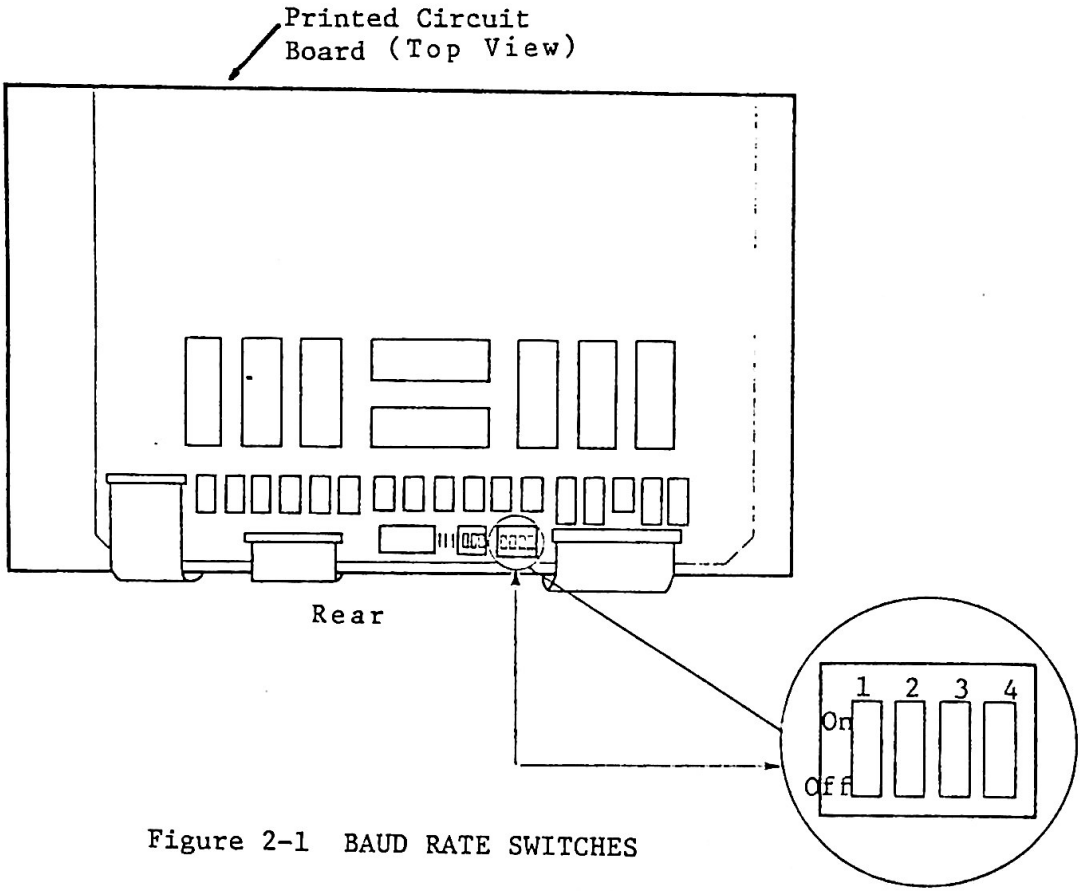


Figure 2-1 BAUD RATE SWITCHES

5. Replace the chassis cover.

6. Plug the power cord into the Power Connector on the rear panel and into a nearby wall outlet.

7. Plug your terminal into the connector on the rear panel marked TERMINAL.

8. Your C8000 was shipped with the power off. Turn it on by inserting one of the system keys into the keyswitch and turning the key to the ON position. The power-on lamp will light up. The C8000 will then automatically test itself to make sure everything is working. When it successfully completes this test (this will take less than a minute), the C8000 will display:

```
ONYX C8000 SELF-TEST COMPLETE
*
```

on your terminal. The asterisk indicates that the C8000 is ready to accept information from the terminal.

If you have trouble with this step, carefully reread Chapters 1 and 2. If you're still having trouble, read Chapter 4, "Diagnosing and Handling Problems".

9. Hit the RETURN or CARRIAGE RETURN key on the terminal. This causes the system software to be loaded and executed. Refer to the Operating System manual supplied with your C8000 to proceed beyond this point.

CONNECTING MODEMS, TERMINALS, AND PRINTERS

Connecting modems, terminals, and printers to the C8000 is simply a matter of plugging the equipment into the proper connector. There are several connectors on the rear panel, each clearly marked. The three labeled TERMINAL, MODEM, and SERIAL PRINTER are serial communications ports. The one labeled PARALLEL PORT is a parallel communication port.

The specific pin assignments for each port are given in the figures below. For more information, contact your ONYX dealer.

Pin Number	Description	Terminal	Printer	Modem
1	Protective ground	-	-	-
2	Transmitted data	Input	Input	Output
3	Received data	Output	Output	Input
4	Request to send (RTS)	Input	Unused	Output
5	Clear to send (CTS)	Output	Output	Input
6	Data set ready (DSR)	On	On	Input
7	Signal ground (common return)	-	-	-
8	Carrier detect (CD)	Unused	Unused	Input
9	(Not used)			
10	(Not used)			
11	Secondary Transmitted data	Unused	Input	Unused
12	(Not used)			
13	(Not used)			
14	(Not used)			
15	Transmit clock	Unused	Unused	Input
16	(Not used)			
17	Receive clock	Unused	Unused	Input
18	(Not used)			
19	(Not used)			
20	Data terminal ready (DTR)	Input	Input	Output
21	(Not used)			
22	(Not used)			
23	(Not used)			
24	(Not used)			
25	(Not used)			

Input - signal to C8000
Output - signal from C8000
On - permanently connected to +12 volts in C8000

(These assignments conform to EIA Specification RS232-C)

Figure 2-2 Serial Port Pin Assignments

Pin Number	Description	Direction
1	Data Bit 0	Bidirectional
2	Data Bit 1	Bidirectional
3	Data Bit 2	Bidirectional
4	Data Bit 3	Bidirectional
5	Data Bit 4	Bidirectional
6	Data Bit 5	Bidirectional
7	Data Bit 6	Bidirectional
8	Data Bit 7	Bidirectional
9	Data Parity Bit	Bidirectional
10	Data Strobe	Output
11	Input Prime	Output
12	Acknowledge	Input
13	Paper Empty	Input
14	Busy	Input
15	Select	Input
16	Ready	Output
17	Strobe	Input
18	No Connection	-
19	No Connection	-
20	Data Bit 0 Return	-
21	Data Bit 1 Return	-
22	Data Bit 2 Return	-
23	Data Bit 3 Return	-
24	Data Bit 4 Return	-
25	Data Bit 5 Return	-
26	Data Bit 6 Return	-
27	Data Bit 7 Return	-
28	Data Parity Return	-
29	Data Strobe Return	-
30	Input Prime Return	-
31	Acknowledge Return	-
32	Paper Empty Return	-
33	Busy Return	-
34	Select Return	-
35	Ready Return	-
36	Strobe Return	-
37	No Connection	-

Figure 2-3 Parallel Port Pin Assignments

WARRANTY TERMS

ONYX Systems will repair or replace any C8000 found to be defective during the 90-day period following delivery. Repairs will be performed at our plant, and we will bear domestic freight charges provided that you first obtain authorization from ONYX to return the machine.

The warranty will not be honored if we determine that the system has been subjected to misuse, abuse, neglect, accident, improper installation, or alteration. The warranty is no longer valid if serial numbers have been removed, defaced, or altered, or if the packing and shipping procedures described below are not followed exactly.

We cannot guarantee the integrity of data recorded on the system disk of a C8000 returned for repair.

RETURN PROCEDURES

1. Call your ONYX Systems Dealer to obtain authorizatio to return your C8000. ONYX will give your Dealer the name of the carrier to use for shipping.

2. Turn the power off using the keyswitch on the front panel.

3. Disconnect the power cord and any other cables attached to the rear panel.

4. If there's a tape cartridge in the tape opening, remove it.

5. Remove the chassis cover.

6. Lock down the disk head carriage by performing the following procedure:

Locate the disk carriage locking screw. This screw is located approximately in the center of the right (viewed form the front) side of the disk unit. Insure the carriage is fully retracted, (ie., the heads are at the outer edge of the disk) by tilting the front of the C8000 several inches off the table. Now turn the carriage locking screw counter-clockwise approximately 19 turns or until it stops. Do not attempt to overturn by applying too much force.

7. Replace the chassis cover.

8. Fill out the Warranty Service Request form at the back of this manual. Tear the form out and tape it to the cover of the machine.

9. Insert the C8000 into its original protective plastic cover and tie the opening shut.

10. Place the protected C8000 in its original shipping carton and seal the carton with strong tape.

11. Your Dealer will ship the carton freight collect to:

ONYX Systems, Inc.
Service Department
10375 Bandley Drive
Cupertino, CA 95014

Use the carrier specified by ONYX when you obtained permission to return the C8000.

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Chapter 3

Operating the C8000

INTRODUCTION

This chapter describes how to power up and initialize the C8000, how to use magnetic tapes, and how to update the C8000 software. If you are not already familiar with the components of the C8000, read Chapter 1, "The C8000", before continuing.

All information on maintaining the C8000 (cleaning the tape drive, changing the fuse, etc.) is contained in Chapter 5, "Maintaining the C8000".

POWERING UP AND INITIALIZING THE C8000

Turn the C8000 on by inserting one of the system keys into the keyswitch and turning the key to the ON position. The power-on lamp will light up. The C8000 will then automatically test itself to make sure everything is working. When it successfully completes this self-test (this will take less than one minute), the C8000 will display:

```
ONYX C8000 SELF-TEST COMPLETE
*
```

on your terminal. The asterisk indicates that the C8000 is ready to accept information from the terminal.

Unless you need to use one of the options in the following table, hit the RETURN or CARRIAGE RETURN key on your console. This action loads the operating system from the system disk. Refer to the Operating System manual supplied with your C8000 to proceed beyond this point.

ENTER :	IN ORDER TO:	WHEN TO CHOOSE THIS OPTION
T	Load an operating system from a tape cartridge.	Use when applying software updates Also use to run the System Exerciser on the Software Distribution Tape (see Chapter 4, "Diagnosing and Handling Problems").
A	Load an alternate operating system from the system disk.	See the Operating System manual supplied with the C8000 for further information.
D	Load system diagnostic programs from the system disk.	Refer to the C8000 Maintenance Manual for further instructions.
S	Load the operating system from the modem port.	Use only when another computer is connected to the C8000 through the modem port. This option requires special software. Contact your dealer or ONYX Systems for more information.

Enter a capital letter.

Figure 3-1 Table of Options for Loading the Operating System

RESETTING THE C8000

To reset the C8000 to its initial state (before the operating system was loaded), push the reset switch on the back panel. Do not reset the C8000 while a program is running. Doing so may destroy data on the system disk. Use RESET only when you:

- want to load a different operating system,
- want to run the System Exerciser,
- want to apply software updates,
- want to recreate the system disk, or
- want to excape from an endless software loop.

USING MAGNETIC TAPES

The C8000 uses magnetic tape instead of floppy disk for removable storage of data. The information below describes how to use tapes on the C8000.

Types of Tape To Use

Because the C8000 records data at 6400 BPI, you must use only tapes designed for use at 6400 BPI. Use tape cartridges of the 3M DC300 type, so called because 3M invented them. Several vendors have been licensed by 3M to manufacture these cartridges, and tapes are available in 300 and 450 foot lengths. A 450 foot tape will hold approximately 12 million bytes of data when large blocks are written. Contact ONYX Systems for the latest information on vendors, and tape specifications.

Inserting Tape Cartridges

Insert tapes into the tape cartridge opening by sliding the cartridge in metal side down. You'll encounter some resistance when the tape is inserted partway. Continue to push the cartridge in firmly until you hear a buzzing sound, which indicates that the tape drive is automatically rewinding the tape. The tape is then ready to be read from or written on by the C8000.

Preparing New Tapes for Use

Before using a tape, initialize it by executing the Tape Initialization program supplied by ONYX Systems. This program will write a volume label at the beginning of the tape and will check to see that data can be written on and read from the tape. The program is described in the manual entitled OASIS on the C8000.

It's a good idea to check a few of every batch of tapes when you purchase them by executing the tape initialization program.

Protecting Tapes From Overwriting

To protect a tape from accidental overwriting, turn the screw-like fixture located on the corner of the tape cartridge so that the arrow on it points to SAFE. (See Figure 3-1 below.) The tape can then be read from but not written on. You can write on a tape only when the arrow points directly away from SAFE.

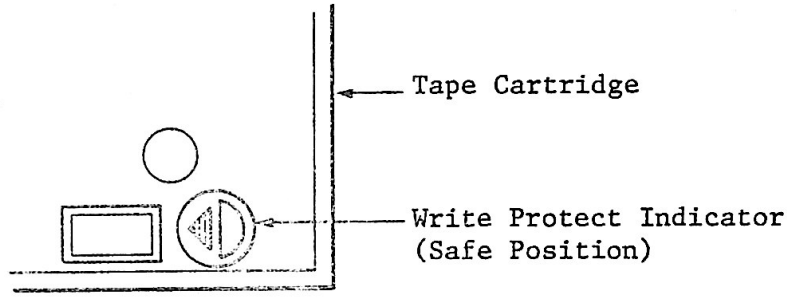

Figure 3-2 Write Protect Mechanism On Tape Cartridge

Recording Technique

The 3M tape cartridge used in the C8000 has four parallel data tracks which run the length of the tape. Only one track can be read or written at a time. When the end of the tape is reached, the C8000 automatically rewinds the tape and switches to the next data track. These rewinds are done at high speed so they have minimum impact on system performance.

Error Handling

When it writes on a tape, the C8000 automatically reads the data back from the tape to verify that it is correct. (This action is referred to as a read-after write check.) If the C8000 detects an error, it backspaces the tape and tries again. If, after several tries, the data cannot be written correctly at that spot on the tape, the C8000 skips ahead and tries again. This process is continued until the data can be written successfully. The C8000 keeps track of the number of these errors and bad spots, and reports them when a program writing to a tape finishes executing. By checking these totals, you can tell which tapes have become too worn to use reliably.

APPLYING UPDATES TO THE SYSTEM SOFTWARE	Updates will be distributed on cartridge tapes along with detailed instructions for applying them.
DIAGNOSING PROBLEMS	Refer to Chapter 4, "Diagnosing and Handling Problems".

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Chapter 4

Diagnosing and Handling Problems

TABLE OF COMMON PROBLEMS

The table below describes how to correct the more common problems you may encounter in installing and setting up the C8000. Where appropriate, see the following descriptions of how to run the System Exerciser and how to recreate the system disk.

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
Power does not come on	1. power cord not plugged in properly	1. plug the power cord into a convenient outlet and into the power connector on the rear panel.
	2. fuse blown	2. replace the fuse - see Chapter 5.
	3. power supply dead, keyswitch broken, etc	3. have the system serviced.
Power-on lamp does not come on	1. power is not on	1. see above.
	2. lamp burned out	2. change the lamp - see Chapter 5.
No power-on message displayed	1. terminal is not connected properly	1. check that terminal cable is firmly connected to TERMINAL

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
		connector and your terminal.
	2. terminal power off	2. turn it on.
	3. terminal not "ON-LINE"	3. put it on-line.
	4. baud rate, parity and/or stop bits set incorrectly	4. see Unpacking Instructions in Chapter 2 and set terminal up accordingly.
	5. loose internal connector, component failure, etc.	5. have the system serviced.
Errors detected during self-test	1. component failure, loose connector, etc.	1. have the system serviced.
Cannot load from system disk	1. corrupted data on disk	1. run System Exerciser (see Chapter 4) to check for hardware problems; if none detected, recreate system disk and reload data files.
	2. loose connectors, component failure, etc.	2. have the system serviced.
	3. if at unpacking, head arm not unlocked	3. follow the unpacking instructions exactly!
Excessive tape errors	1. dirty read/write heads	1. clean heads (see Chapter 5).
	2. worn, damaged or wrong tape or tape cartridge	2. replace the cartridge.
	3. component failure, loose connector, etc.	3. have the system serviced.

Figure 4-1 Table of Common Problems

DESCRIPTION OF THE SYSTEM EXERCISER

The System Exerciser is a program on the Software Distribution Tape that performs simple tests on each major hardware component of the C8000. Its purpose is to quickly determine with a high degree of accuracy whether your C8000 is operating correctly.

The tests that the System Exerciser runs are non-destructive. That is, they will not destroy data on the system disk. For further data protection, the System Exerciser will request that a blank tape be put in the tape drive before it writes to tape.

RUNNING THE SYSTEM EXERCISER

The following steps describe how to run the System Exerciser. See Figure 4-2 for the output from a sample execution.

1. Put the Software Distribution Tape in the tape opening. Push the reset switch on the back panel.

2. After the prompt (*) is displayed, enter a capital T.

4. The following list of Software Distribution Tape functions will be displayed:

```
1. RUN SYSTEM EXERCISER UILITY
2. RECREATE SYSTEM DISK
3. DISPLAY DELIVERED SOFTWARE DIRECTORY

   SELECT PROGRAM:
```

Enter a 1 to run the System Exerciser, then hit the RETURN or CARRIAGE RETURN key.

5. The following list of options (or "menu") will be displayed:

```
EXERCISER OPTIONS:

1. MEMORY
2. DISK(s)
3. TAPE
4. ALL OF THE ABOVE
5. RETURN TO MONITOR

   SELECT TEST:
```

Choose a test and type in the number corresponding to your choice, then hit the RETURN or CARRIAGE RETURN key. Follow the instructions below for the specific option you picked.

Memory Exerciser

Description. This test cycles through every memory location in the C8000, making sure that each location stores data properly. The Memory Exerciser writes specially chosen data patterns, reads the data back, then verifies that what is stored is what was written.

Action. You do not need to supply any information to the Memory Exerciser. It will run for approximately 6 seconds. If it does not detect any problems, it will display:

MEMORY EXERCISER COMPLETED SUCCESSFULLY

on your teminal. If it displays any other message, have your system serviced immediately.

When it's finished, the Memory Exerciser will return to the list of System Exerciser options.

Disk(s) Exerciser

Description. This option performs a number of tests on either the system disk or on the secondary disks you specify. The tests do not destroy any of the data recorded on the disks. Do not worry if the disk head does not appear to move during some of the tests. This is normal.

Action. When the Disk Exerciser begins executing, it will ask you which drive you wish to test.

SPECIFY DRIVE TO TEST:

if you want to test the system disk, hit the RETURN or CARRIAGE RETURN key. If you have several disks, enter the drive number (0 to 14; 0 = system disk), then hit the RETURN or CARRIAGE RETURN key.

The Disk Exerciser runs for approximately 3 seconds. If it does not find any problems, it will display:

DISK EXERCISER COMPLETED SUCCESSFULLY

on your terminal. If it detects a problem, it will display an error message, then terminate the test by displaying:

EXERCISE OF DRIVE n FAILED

In this case, have your system serviced immediately.

When the Disk Exerciser is finished, it will return to the list of System Exerciser options.

Tape Exerciser

Description. The Tape Exerciser writes on and reads data from each channel on a scratch tape, verifying that what is read is the same as what was written. It keeps track of the errors it detects, then displays the count at the end of the test.

Action. Before performing any tests, the Tape Exerciser will ask you to remove the Software Distribution Tape and insert a scratch tape (that is, any tape that does not have data that you want to save). The following will be displayed:

```
REMOVE DIST'N TAPE AND INSERT SCRATCH
HIT "RETURN" KEY TO CONTINUE, ANYTHING ELSE TO
ABORT THIS TEST.
```

Make sure that the write protect mechanism on the scratch tape points away from SAFE, and make sure that the tape is relatively new. Worn tapes can cause the tape exerciser error counts to be excessive.

Hit the RETURN or CARRIAGE RETURN key to start the test portion of the Tape Exerciser. If you forgot to remove the Software Distribution Tape, or if the scratch tape you inserted is write-protected, the Tape Exerciser will display:

```
WRITE PROTECTED SCRATCH.
HIT "RETURN" KEY TO CONTINUE, ANYTHING ELSE TO
ABORT THIS TEST.
```

Insert a scratch tape with the write protect mechanism turned away from SAFE, then hit the RETURN or CARRIAGE RETURN key to continue the test.

The Tape Exerciser runs approximately 2.5 minutes. When it's finished, it will display:

```
nnnn ERRORS DETECTED.
TAPE EXERCISER COMPLETED SUCCESSFULLY.
```

If the number of errors is greater than 10, clean the tape head, then rerun the Tape Exerciser. (See Chapter 5, "Maintaining the C8000", for instructions on cleaning the tape head.) If the number of errors is still greater than 10, rerun the exerciser using another scratch tape. If the high error rate persists, have your system serviced.

If the Tape Exerciser detects a failure in the tape drive itself, it will display:

TAPE EXERCISER FAILED

on the terminal. If this message appears, have your system serviced immediately. As its last action, the Tape Exerciser will display:

REMOVE SCRATCH AND REINSERT DIST'N TAPE.
HIT "RETURN" KEY TO CONTINUE.

If you wish to continue executing the System Exerciser, insert the Software Distribution Tape and hit the RETURN or CARRIAGE RETURN key. The list of options will be displayed and the System Exerciser will ask which one you want.

If you do not want to continue executing the System Exerciser, push the reset switch on the back panel, then reinitialize the C8000 as described in Chapter 3, "Operating the C8000".

All Tests

Each of the tests shown in the list is run in the order they appear. Execution proceeds exactly as described above, except that the list of options is not redisplayed until the last test is run.

Return to Monitor

This option terminates the System Exerciser. After choosing it, you can either execute one of the other functions on the Software Distribution Tape, or else you can push the reset switch on the rear panel, then reinitialize the C8000 as described in Chapter 3, "Operating the C8000".

RECREATING THE SYSTEM DISK

Before selecting the Recreate program, you should first run the System Excerciser to insure that the memory and disk are functioning properly. If they are, a software malfunction may have corrupted the system disk and you should recreate the system disk. Since you will typically recreate the system disk only after running the System Exerciser, these instructions assume that you have already loaded the Software Distribution Tape and that the following list of functions is displayed at your terminal:

1. RUN SYSTEM EXERCISER UTILITY
2. RECREATE SYSTEM DISK
3. DISPLAY DELIVERED SOFTWARE DIRECTORY

SELECT PROGRAM:

At this point, enter a 2, then hit the RETURN or CARRIAGE RETURN key. The Recreate program will reformat the entire system disk, destroying any

existing data then reload the software delivered with the system. It will signal that it's finished by displaying:

SYSTEM DISK RECREATED SUCCESSFULLY

The list of Software Distribution Tape functions will again be displayed. You can either choose one of them, or you can push the reset button, then reinitialize the C8000 as described in Chapter 3, "Operating the C8000".

MEMORY PARITY ERRORS

The C8000 is equipped with circuitry to notify the user in the event of a memory failure. If, during the execution of a program, a memory error is detected, the C8000 will immediately display the following message on the terminal:

PARITY ERROR

or

MP if a critical I/O operation was in progress

When this message appears, the memory test described in Chapter 4 should be run. If the memory test shows no errors, try executing your program again.

POWER FAILURES

The C8000 constantly monitors the AC power line for interruptions long enough to cause loss of system memory. If such an interruption occurs, the C8000 will output:

PL

indicating that a power loss has occurred. When the power is restored, the C8000 will automatically begin its self- test sequence.

oOo

EXAMPLE OF SYSTEM EXERCISER

Displayed	Action
(Operator response is underlined)	Software Distribution Tape inserted, and C8000 reset at this point.
ONYX C8000 SELF-TEST COMPLETE *T	Operating system loaded from the Software Distribution Tape.
1. RUN SYSTEM EXERCISER UTILITY 2. RECREATE SYSTEM DISK 3. DISPLAY DELIVERED SOFTWARE DIRECTORY	List of Software Distribution Tape functions displayed.
SELECT PROGRAM: 1	System Exerciser chosen.
EXERCISER OPTIONS: 1. MEMORY 2. DISK(s) 3. TAPE 4. ALL OF THE ABOVE 5. RETURN TO MONITOR	List of System Exerciser options displayed.
SELECT TEST: 2	Disk test chosen.
SPECIFY DRIVE TO TEST: 4	Drive 4 chosen for test.
DISK EXERCISER COMPLETED SUCCESSFULLY	Disk test finished.
EXERCISER OPTIONS: 1. MEMORY 2. DISK(s) 3. TAPE 4. ALL OF THE ABOVE 5. RETURN TO MONITOR	List of System Exerciser options redisplayed.
SELECT TEST: 3	Tape test chosen.

Displayed	Action
REMOVE DIST'N TAPE AND INSERT SCRATCH, HIT "RETURN" TO CONTINUE, ANYTHING ELSE TO ABORT THIS TEST.	
	Software Distribution Tape removed, and a scratch tape inserted. Carriage return causes test to be executed.
0002 ERRORS DETECTED. TAPE EXERCISE COMPLETED SUCCESSFULLY. REMOVE SCRATCH AND REINSERT DIST'N TAPE. HIT "RETURN" TO CONTINUE.	Tape test finished.
	Reset switch is pushed.
ONYX C8000 SELF-TEST COMPLETE *	
	C8000 is now ready to be reinitialized.

FIGURE 4-2 Example of System Exerciser Session

Chapter 5

Maintaining the C8000

INTRODUCTION

The C8000 requires very little care. This chapter gives some guidelines for general maintenance, then describes the few simple maintenance procedures you need to be familiar with.

GENERAL MAINTENANCE

To ensure the best service from your C8000, follow these guidelines:

- Do not put drinks or other liquids on top of the chassis. Spilled liquids can enter the C8000 through openings in the chassis and damage the system.

- Keep the ventilation openings in the chassis clear. Blocking the front, rear, or bottom vents may cause the system to overheat.

- Keep the area around the tape drive as free from dust as possible. Dust can contaminate the tape head and cause errors during read and write operations.

- Use only soap and water or a mild detergent to clean the external surfaces of the C8000. Do not use cleaners containing solvents, and do not use excessive water.

CLEANING THE TAPE HEADS

The read/write heads in the tape drive pick up oxide from tapes during normal operation. Eventually, this buildup of oxide interferes with the reading and writing of data. To avoid this condition, clean the tape heads regularly.

Frequency. The frequency with which you clean the heads depends on how often you use tapes and how

many of them are new. (New tapes have more loose oxide.) If you typically use the tape drive only once a day, clean the heads once a week. If you use the tape drive more frequently, or if you have experienced excessive read/write errors, clean the heads more often.

Procedure. (see figure below) Do not touch the tape heads or the capstan with your fingers. Use a long-handled polyurethane swab such as Tex Wipe #TX 700 dipped in 91 percent Isopropol Alcohol solution to wipe the tape heads. First wipe back and forth in the direction that the tape moves (left to right), and then wipe up and down. Use firm pressure when wiping. Occasionally, use a dry swab to wipe the capstan.

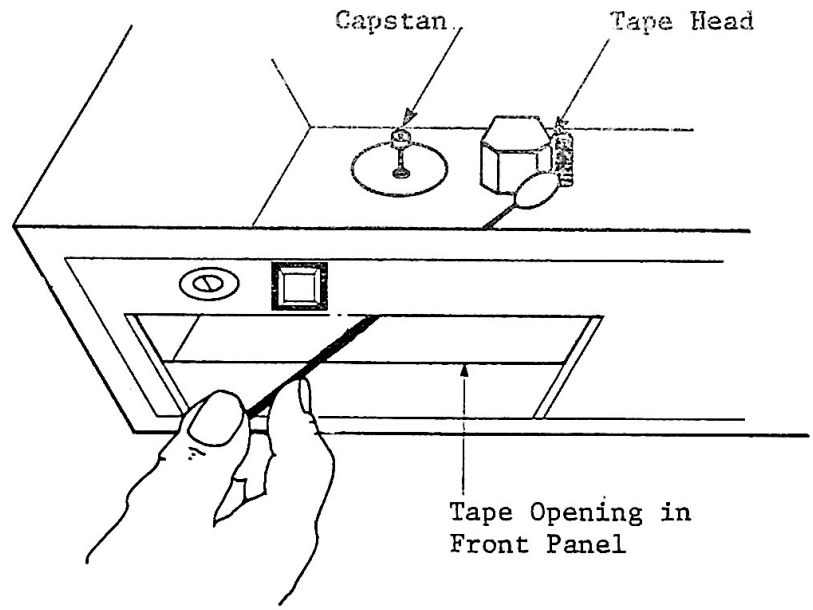

Figure 5-1 Tape Head Cleaning Procedure

REPLACING A FUSE

The fuse in your C8000 prevents it from drawing excessive power from the AC line. To replace the fuse, follow these steps:

1. Unplug the C8000 from the AC line.

2. Unscrew the cap from the fuse receptacle on the rear panel by turning counter-clockwise one-quarter turn.

3. Remove the blown fuse from the cap and insert a new one.

4. Screw the fuse holder cap back in place by pushing in and turning clockwise one-quarter turn.

WARNING: If you replace a fuse and it blows right away, do not continue using the C8000. Have it serviced immediately.

ONYX Systems shipped one spare fuse with your C8000. If you need another, buy 3AG, 7AMP SLO-BLO for 115 volt operation and 3AG, 3.0 AMP SLO-BLO for 230 volt operation.

REPLACING THE POWER-ON LAMP

ONYX Systems shipped a spare lamp with your C8000. If you need to replace the original, follow these steps:

1. Pull the white lens out of the lamp assembly.

2. Remove the faulty lamp from the lens and replace it with the spare.

3. Push the lens back into the lamp assembly until it snaps firmly into place.

MOVING THE C8000

If you are moving the C8000 other than a short distance, repack it as if you were returning it to the factory. See Chapter 2, "Installing the C8000", for instructions.

Failure to observe this precaution may damage the C8000 and is considered neglect under the terms of the ONYX warranty.

oOo

APPENDIX A

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APPENDIX B

C8000 SPECIFICATIONS

PROCESSOR: ZILOG Z80A 4 MHZ Clock

MEMORY: 64K bytes with parity using 16K dynamic RAM chips.

DISK: 10 or 18 Mbyte 8 inch fixed Winchester drive. Up to a total of 8 drives may be daisy chained together.

Average access time	:	50 ms
One track seek	:	10 ms
Average latency	:	8.3 ms

TAPE: 12 Mbyte 3M cartridge drive recording at 6400 BPI. Drive employs read-after write and CRC to insure data integrity.

Search speed	:	90 IPS
Record/playback	:	30 IPS

I/O: 8 bit bidirectional parallel port with parity and six general purpose control lines. It can be used as an industry standard (Centronics) printer interface or as a DMA controlled bidirectional port for connecting the C8000 to another computer.

Full duplex RS-232 terminal port with programmable baud rates from 50 - 38.4K baud.

RS-232 modem port will support most synchronous and asynchronous modems, including 103, 201, 202, 208, and 212 types.

RS-232 serial printer port.

SIZE:	Width:	17" (43 cm)
	Height:	8" (20 cm)
	Depth:	22" (56 cm)

WEIGHT: 55 lbs.

POWER: 115 VAC 60 HZ, 5.0 AMPS Max
230 VAC 50 HZ, 2.5 AMPS Max

ENVIRONMENTAL:
10 - 40° C
20 - 80 percent humidity (without condensation)

APPENDIX C

LIST OF SOFTWARE MANUALS

C8000 USER GUIDE

OASIS ON THE C8000

OASIS OPERATING SYSTEM

APPENDIX D

WARRANTY SERVICE REQUEST

Please complete and attach this form to the cover of your C8000 before shipping to factory for repair.

To aid in diagnosing the problem, please supply as much information as possible about the conditions under which the failure occured. Especially helpful, is diagnostic information displayed on the terminal after parity errors or during execution of the System Exerciser.

DESCRIPTION OF THE PROBLEM (include messages) :

NAME OF PERSON MOST FAMILIAR WITH PROBLEM:

COMPANY:

ADDRESS:

PHONE:

DATE:

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